



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/731,187	12/09/2003	Sivarama K. Kuchibhotla	A305	4877

7590 04/14/2005

Carl C. Kling  
General Counsel  
Anvik Corporation  
6 Skyline Drive  
Hawthorne, NY 10532-2165

EXAMINER

NGUYEN, HUNG

ART UNIT	PAPER NUMBER
----------	--------------

2851

DATE MAILED: 04/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/731,187

Applicant(s)

KUCHIBHOTLA ET AL.

Examiner

Hung Henry V. Nguyen

Art Unit

2851

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 31 January 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) 14-18 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,4,5,10,11,13 and 19-24 is/are rejected.
- 7) ☒ Claim(s) 3,6-9 and 12 is/are objected to.
- 8) ☒ Claim(s) 1-24 are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 December 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

**DETAILED ACTION*****Election/Restrictions***

1. Applicant's election with traverse of group I (claims 1-9, 12-13) in the reply filed on January 21, 2005 is acknowledged. The traversal is on the ground(s) that "the claims do not define inventions that are so separate that distinct as to require division at all and in any case, that the claims do not require such a drastic division as by the divisor "six" ". Applicant's arguments have been carefully reviewed but they are not persuasive. The restriction has been made as set forth on M.P.E.P section 806.05. Therefore, any arguments that is irrelevant to or does not relate to MPEP section 806.05 will not be addressed. The applicant alleges that the six-way restriction is improper because the search and examination burden on the Examiner is minimal (10% added burden) while it will place a great cost and man burden on the applicant. The applicant also alleges that the USPTO has already in this patent application charged fees for patent claims over 20 and for independent claims over 3. The Applicant is reminded that whether the instant restriction creates an added expense to the applicant is not germane to whether a restriction is proper or not. The issue here is whether the claims are independent and distinct. As demonstrated in the Restriction Requirement, invention I is related to **a projection lithography system** for curved surface lithography wherein an optical system called, "zerogon" having the zero power aggregate optical effect of identical pair of oppositely oriented meniscus lens elements, is placed onto the optical path to compensate illumination anomalies. Invention II is related to the so-called *Zerogon compensator* as a **mask support** for a flexible film curved mask; invention III (claims 14-16) is related to **curved mask** with particular structures; invention IV (claims 17-18) is drawn to **a contact/ or non-contact process** for making a

Art Unit: 2851

photolithography mask; invention V (claim 19) is related to a projection optical system for projecting an image formed on a curved mask onto a curved substrate; and invention VI is related to “a Zerogon” having paired identical meniscus lenses for supporting a curved mask. As such, the distinct and separate searches are quite extensive and place serious burden on the Examiner in regard to both examination and search. Particularly, a curved mask and a contact lithography/non-contact lithography process for making a mask (see group III and IV) are not examined and issued in class 355 but rather in class 430/5 and 430/311 respectively.

In response to Applicant's arguments that the restriction should be described as “combination and subcombination”. The Examiner respectfully disagrees with the applicant. For instance, Independent claim 1 recites “A projection lithography system, for curved surface lithography, having a number of required transmissive elements in a light path controlled by projection optics and illumination optics characterized in that: the illumination optics has means to form an illumination compensator ‘Zerogon’ having the zero-power aggregate optical effect of two-closely-spaced identical meniscus elements back-to-back.” The independent claim 17 (for example) recites “ a projection lithography mask made by the following contact lithography/non-contact lithography process, starting with a planar mask of metal-on-quartz; (1) Place a layer of photo-active material on aluminized polypropylene in contact with said planar mask; (2) Expose to imaging radiation; (3) Process to provide a pattern of aluminum on a flexible film of polypropylene; (4) Place the patterned aluminum-on-polypropylene in contact with a hard, curved optically transparent blank projection mask resting on a Zerogon”. A reading of claim 17 (for example only) provides no evidence to indicate that these underlined limitations can be found in claims 1-9 and 12. However, even the claims of present application should be

Art Unit: 2851

described as “Combination and subcombination” as suggested by applicants, the present application clearly contains multiple inventions which are still restrictable under section 806.05(a) as being “Combination and subcombination”.

The applicants’ counsel stated that “the examiner and patent counsel, communicating by recorded messages only, did not discuss the merits of the restriction”. This is not quite true. The Examiner has called the counsel but the counsel was not in his office. Therefore, the Examiner, in good faith, has left messages for the counsel and requested for a written response to the Restriction Requirement. If communicating in person with the Examiner was a high priority for the counsel, counsel could have requested for a personal interview and the Examiner will be happy to arrange a personal interview to meet with the counsel. The counsel’s statement above seems to metaphorically accuse the Examiner of not offering any chances for the counsel to speak with this Examiner personally.

The applicants’ counsel has introduced himself as a 47 year-experienced counsel. The Examiner has respect for the counsel for his 47 years experience with patent work. However, if the counsel finds that the restriction made by this Examiner is wrong, the counsel should only point to the section or sections of the MPEP to back up the counsel’s position. Surprisingly, the counsel’s remarks, dated January 26, 2015, in 37 plus pages in all, have accused the Examiner on a personal level by stating “the examiner, does not want to search beyond a single subclass for a single fee” and “The reason given by the examiner appears to be simply the convenience of the examiner – so the examiner won’t have to search two extra subclasses in one class and two subclasses in another class.” The counsel’s remarks went even further by stating “The examiner may expect to fight just because his decision is being questioned, but the examiner doesn’t want

Art Unit: 2851

to use too much time in argument over procedure. The examiner may be motivated either to fight to the finish or, more likely, simply to repeat his restriction..." The counsel, even furthers the accusation by asking the Examiner to answer the twelve questions, in Appendix 1, detailing the time required for the Examiner to perform each task, which are not remotely related to the restriction requirement or the MPEP sections thereof relative to restriction practices. To create a log of every single detail of what was done and how long it took is not a job of an Examiner. Therefore, the Examiner will not response to such questions since they are irrelevant to the restriction.

The restriction requirement is still deemed proper and is therefore made **FINAL**. However, the Examiner has decided to examine **claims 1-13 and 19-24**, as suggested by the counsel, page 18 of the remarks. This decision is made solely out of professional courtesy to the counsel and the remarks made by the Counsel had no bearing on this decision.

### ***Drawings***

2. The drawings are objected to under 37 CFR 1.83(a) because they fail to show "R<sub>3</sub>, R<sub>4</sub>", "thickness t<sub>3</sub>" (see page 17, lines 23, for example) as described in the specification. Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d).
3. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "locking band 9" must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### *Specification*

4. The abstract of the disclosure is objected to because on page 16, line 13, the terms of "zero-power" are underlined. The Applicant is reminded that the underlining must be deleted since in a patent application, underlining is normally used to indicate insertion. It is confusing to use the same in instances where the applicant desires to have the underlining appear in the published patent. Correction is required. See MPEP § 608.01(b).
5. Furthermore, on page 16, line 5, reference to "U.S. Patent 706,650-1902", this patent does not exist. Please clarify.

***Claim Rejections - 35 USC § 112***

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 10-11, 13 and claim 19 are rejected under 35 U.S.C. 112 second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

A. As to claim 10-11 and 13, where applicant acts as his or her own lexicographer to specifically define a term of a claim contrary to its ordinary meaning, the written description must clearly redefine the claim term in the claims and set forth the uncommon definition so as to put one reasonably skilled in the art on notice that the applicant intended to so redefine that claim term. *Process Control Corp. v. HydReclaim Corp.*, 190 F.3d 1350, 1357, 52 USPQ2d 1029, 1033 (Fed. Cir. 1999). The term “zerogon” in the mentioned claims is used by the claims to define “a zero power identical of oppositely-oriented meniscus lens elements mounted in the illumination light path”. It is also used by the claim to mean “a mask support for a flexible curved mask” while currently, the at least accepted meaning of “a zerogon”, can be “a polygon for  $m=0$  where  $m$  is natural number used to defined the number of sides of the polygon.” (for example, please see Superquadrics and Generalized Minkowski Metrics” by Johan Gielis, Genially Technical Report March 2002). Furthermore, the term of “Zerogon” in these claims, is indefinite because it is used to define two different subject matters such as “a zero identical pair of oppositely-oriented meniscus lens elements” and “mask support”, thus, it is not clearly understood and it can not be determined the metes and bounds of the claims.



Art Unit: 2851

The applicant is reminded that the claimed subject matter to examination will be given their broadest reasonable interpretation and limitations appearing in the specification are not be read into the claims. In re Yamamoto, 740 F. 2d 1569, 1571, 222 USPO 934, 936 (Fed.Cir. 1984). With this in mind, the rejections herein will focus on how the terms and relationships thereof in the claims are met by the references. Response to any limitation that is **not** in the claims or any argument that is irrelevant to or does not relate to any specific claimed language will not be warranted.

B. Regarding claim 19, claim is rejected under 35 U.S.C. 112, second paragraph as being a hybrid claim. The claim purports an apparatus for imagining a curved mask but appears to be a method claim and it is narrative in form. In order to be given patentable weight, a function recitation must be expressed as a “means” for performing the specified function, as set forth in 35 U.S.C. 112, 6<sup>th</sup> paragraph, and must be supported by recitation in the claim of sufficient structure to warrant the presence of the functional language.

***Claim Rejections - 35 USC § 102***

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 10-11 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Klosner et al (U.S.Pat. 6,416,908).

Art Unit: 2851

As the best the claimed subject matters are understood (see rejection under 35 U.S.C. 112, second paragraph, supra). Claims are incorporated herein by reference.

With respect to claims 10-11, Klosner discloses a projection lithography system having a supporting device/platform (15) which can be regarded as the so-called "a zerogon" for supporting a flexible film curve mask (12) having surface curvature identical to known curvature of a substrate.

10. Claim 24 is rejected under 35 U.S.C. 102(b) as being clearly anticipated by Murayama et al (U.S.Pat. 5,757,552).

With respect to claim 24, Murayama et al (figure 1) discloses a corrective lens group (C) which can be regarded as the so-called "a Zerogon" having back to back complementary lens elements (meniscus lenses M1, M2) serving as a zero-power optical device (see col.4, lines 33-34; col.6, lines 25-27), at a position with respect to the optical axis in the optical system to transmit collimated and uncollimated beams without deviation and without shift from the line of propagation.

### ***Claim Rejections - 35 USC § 103***

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 2851

12. Claims 13 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Klosner et al (U.S.Pat. 6,416,908) in view of Murayama et al (U.S.Pat. 5,757,552).

As to claims 13, 19, Klosner et al discloses a projection lithography scanning system for imaging a curved mask (12) onto a curved substrate (11), comprising a radiation means (14); a projection means (13); a scanning means (15) "with provisions for control of defocus which must be minimized for scanning system, by continuously adjusting the position of the projection lens (13) along its axis during scanning, with the adjustments related to changes of topography of the curved mask and substrate, such that the object distance and image distance for the conjugate points at the center of the lens field remain constant during scanning (see col.7, lines 50-57).

Klosner et al lacks to show a means to keep the size and shape of the scanning beam constant on the curved mask and curved substrate or to minimize the effects of image anomalies. Murayama as discussed teaches a corrective lens group (C)/ which can be regarded as claimed "Zeroon", positioned at a position with respect to the optical axis in the optical system to keeps the size and shape of beams constant and to transmit collimated and uncollimated beams without deviation and without shift from the line of propagation. It would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the teachings of Klosner and Murayama to obtain the invention as specified in claims. It would have been obvious to a skilled artisan to utilize the corrective lens group/ "Zeroon" as taught by Murayama into the projection lithography system of Klosner for providing correction of image degradation and improving the quality of the images.

Art Unit: 2851

13. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Klosner et al (U.S.Pat. 6,416,908) in view of Murayama et al (U.S.Pat. 5,757,552) and further in view of Moskovich (U.S.Pat. 5,200,861).

As to claim 1, Klosner as modified by Murayama discloses all basic features of the instant claim except for the two meniscus lens elements being identical. Moskovich teaches a lens system comprising two meniscus lenses for correcting aberration and the field curvature. Moskovich suggests that the two meniscus elements are identical for reducing the cost of the lens system (see col.3, lines 32-39). In view of such teachings, it would have been obvious to one having ordinary skill in the art at the time the invention was made to employ two identical meniscus lens elements to constitute the corrective lens group/"Zerogon" of Murayama, as suggested by Moskovich for at least the purpose of reducing the cost of the lens system and whereby the cost of the projection lithography system is greatly reduced.

14. Claims 2, 4-5, 20-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Klosner et al (U.S.Pat. 6,416,908) in view of Murayama et al (U.S.Pat. 5,757,552) and further in view of Moskovich (U.S.Pat. 5,200,861) and further in view of Konoma et al (U.S.Pat. 4,015,897).

As to claims 2, 4-5, 20-21, Klosner as modified by Murayama and Moskovich discloses substantially all of the limitations of the above claims except for the "Zerogon" being used to support the mask means. Konoma et al teaches an aperture stop (12) is supported by a pair of meniscus lenses (see figure 1). In view of such teachings it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the two meniscus

Art Unit: 2851

elements of the Murayama for supporting the mask in the system of Klosner as modified by Moskovick, for at least the purpose of simplification of structure and reducing the size of the lithographic apparatus. Furthermore, it has been held that a recitation with respect to the manner in which a claimed element is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. *Ex parte Masham* 2 USPQ 2d 1647 (1987).

***Allowable Subject Matter***

15. Claims 3, 6-9 and 12 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

16. The following is a statement of reasons for the indication of allowable subject matter: Claims 3, 6-9 and 12 have been found to be allowable since the prior art of record does not specifically disclose the combination of a projection lithography system comprising among other features a curved mask is a photo-opaque pattern on the curved exit surface of the "Zero gon means" or a "Zero gon" having two oppositely-oriented optical elements aggregating zero power, having an entry face and an exit face and a curved patterning mask positioned directly on the exit face of the "Zero gon", as recited in the instant claims of the present invention.

Art Unit: 2851

***Prior Art Made of Record***

17. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.


Ishibai et al (U.S.Pat. 5,166,830) discloses a pair of identical meniscus lens elements for compensation of spherical aberrations and off axial aberrations.

18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hung Henry V. Nguyen whose telephone number is 571-272-2124. The examiner can normally be reached on Monday-Friday (First Friday off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Judy Nguyen can be reached on 571-272-2258. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

hvn  
4/3/05

  
**HENRY HUNG NGUYEN**  
**PRIMARY EXAMINER**

  
**JUDY NGUYEN**  
**SUPERVISORY PATENT EXAMINER**

Application/Control Number: 10/731,187

Page 14

Art Unit: 2851